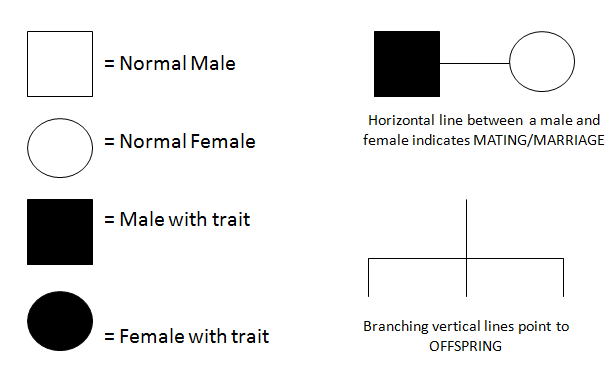
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Pedigree Tutorial**

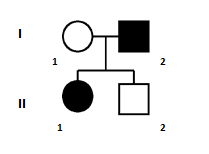
Ms. Ottolini, PreAP Biology

1. **How can we track the inheritance of a trait through multiple generations?**
2. Scientists use pedigree charts to track the inheritance of a trait through multiple generations. You need to be able to analyze existing pedigrees and create pedigrees from information you are given about a family’s traits.
3. Below is a summary of the symbols used in a pedigree chart…



1. **What types of traits are shown in pedigrees?**
2. Autosomal dominant traits are controlled by a dominant allele on an autosome (a non-sex chromosome). For these traits, we use the following alleles, which result in the following genotypes and phenotypes.

|  |  |  |  |
| --- | --- | --- | --- |
| **Alleles** | **Genotype** | **Phenotype** | |
| A = trait  a = normal | AA | Trait |
| Aa |
| aa | Normal |



Fill in the genotypes for each individual below

I-1 \_\_\_\_\_

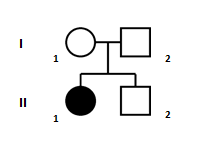
I-2 \_\_\_\_\_

II-1 \_\_\_\_\_

II-2 \_\_\_\_\_

1. Autosomal recessive traits are controlled by a recessive allele on an autosome. For these traits, we use the following alleles, which result in the following genotypes and phenotypes.

|  |  |  |
| --- | --- | --- |
| **Alleles** | **Genotype** | **Phenotype** |
| A = normal  a = trait | AA | Normal |
| Aa |
| aa | Trait |



Fill in the genotypes for each individual below

I-1 \_\_\_\_\_

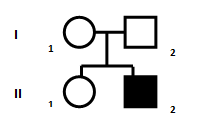
I-2 \_\_\_\_\_

II-1 \_\_\_\_\_

II-2 \_\_\_\_\_

1. Sex-linked recessive traits are controlled by a recessive allele (usually on the X chromosome). Pedigrees that follow this method of inheritance will show more males with the trait than females. This is because males only need to receive one copy of the recessive allele to show the trait (because they only have one X chromosome). In contrast, females must receive two copies of the recessive allele to show the trait. For these traits, we use the following alleles, which result in the following genotypes and phenotypes.

|  |  |  |
| --- | --- | --- |
| **Alleles** | **Genotype** | **Phenotype** |
| XA = normal  Xa = trait | XAXA or XAXa | Female, Normal |
| XaXa | Female, Trait |
| XAY | Male, Normal |
| XaY | Male, Trait |



Fill in the genotypes for each individual below

I-1 \_\_\_\_\_

I-2 \_\_\_\_\_

II-1 \_\_\_\_\_

II-2 \_\_\_\_\_

Fill in the genotypes for each individual below

I-1 \_\_\_\_\_

I-2 \_\_\_\_\_

II-1 \_\_\_\_\_

II-2 \_\_\_\_\_

Fill in the genotypes for each individual below

I-1 \_\_\_\_\_

I-2 \_\_\_\_\_

II-1 \_\_\_\_\_

II-2 \_\_\_\_\_